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A Quantitative Study on the Level of Effectiveness of an Alumni Engagement and Support System (AESS) in Enhancing Alumni–Institution Connections: Evidence from a Philippine Higher Education Institution Using a Descriptive-Correlational Approach

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ABSTRACT

Higher education institutions still face the issue of maintaining long-term ties with their alumni. The introduction of Alumni Engagement and Support Systems (AESS) provides a systematic approach to this challenge. The influence of these systems was assessed quantitatively through a study of 287 graduates of a Philippine institution using a validated 30-item survey to determine their effect on institutional bonds. Results show that a high level of accessibility and communication ease in an AESS supports a strong sense of belonging among graduates even though attendance at physical events remains an area for ongoing strategic improvement. Importantly, the statistical study showed a substantial positive correlation between system performance and the depth of the alumni-institution link ($r = .614$, $p < .001$). These findings underline the importance of an institutional commitment to an effective, communicative support system as a key determinant in securing the long-term commitment and involvement of its alumni group.

Keywords: Alumni Engagement; Support Systems; Institutional Connectivity; Technology Acceptance Model; Higher Education; Alumni–Institution Relationship; Digital Platform; Sense of Belonging; Pearson Correlation; Descriptive-Correlational Research; Philippine Higher Education; User Satisfaction.

1.0. Introduction

Alumni are critical pillars in the development of higher education institutions, contributing significantly through student mentoring, professional networking, institutional funding, and global reputation building. Nevertheless, higher education institutions encounter a number of difficulties when trying to maintain a long-term connection with their alumni. Conventional forms of communication such as irregular emails, newsletters, and annual homecomings appear inadequate for fostering alumni involvement. In view of rapid technological developments, many higher education institutions began to implement Alumni Engagement and Support Systems (AESS), which aim at facilitating the process of communication, promotion of events, solicitation of donations, and tracking alumni contacts.

Although the application of AESS became widespread in recent years, little is known about the effectiveness of these systems in establishing a strong relationship between

alumni and their alma mater. Most research on AESS concentrates on system functions or user satisfaction separately, failing to estimate the effect on the relationship quality, which is defined as a multidimensional variable including involvement, communication, and affiliation. This research attempts to fill the void by conducting an empirical evaluation of the effectiveness of the Alumni Engagement and Support System in question and testing whether there is a relationship between effectiveness and connectivity. Ultimately, this research will offer valuable knowledge for administrators who wish to develop optimal engagement strategies.

1.1. Study Objectives

This study aims to achieve the following specific objectives:

1. To assess the level of effectiveness of the Alumni Engagement and Support System (AESS) in terms of communication, accessibility, user satisfaction, and engagement activities.
2. To determine the strength of alumni–institution connections in terms of participation in events, communication with the institution, and sense of belonging.
3. To establish whether a statistically significant relationship exists between the effectiveness of the AESS and the level of alumni–institution connections.
4. To identify which dimension of system effectiveness most strongly predicts alumni–institution connection levels.
5. To provide evidence-based recommendations for school administrators, system developers, and alumni affairs offices on improving engagement strategies.
6. To contribute empirical, locally validated data to the existing literature on digital alumni engagement in Philippine higher education.

1.2. Statement of the Problem

The main issue of this research is the absence of any empirical studies about the effectiveness of Alumni Engagement and Support Systems in improving the relationship between alumni and institutions. Specifically, this study seeks to answer the following research questions:

How effective is the Alumni Engagement and Support System in terms of the following areas according to the alumni?

- Communication (Timeliness, clarity, and relevance of messages)
- Accessibility (Ease of use and compatibility of the system with various gadgets)

- User satisfaction (Overall satisfaction of the user with the system)
- Engagement activities (Events, volunteering activities, and donations management)

What is the strength of the alumni-institution relationships with respect to:

- Event participation (Attendance and participation)
- Communication with the institution (Contact and communication with the institution)
- Sense of belonging (Emotional connection to and loyalty towards the institution)

Is there any relationship between the efficiency of the Alumni Engagement and Support System (independent variable) and alumni-institution relationship (dependent variable)?

1.3. Hypotheses

The below hypotheses have been stated for testing using statistical techniques:

- Null Hypothesis (H_0): There is no statistically significant relationship between the effectiveness of the Alumni Engagement and Support System and alumni–institution connection levels.
- Alternative Hypothesis (H_1): There is a statistically significant relationship between the effectiveness of the Alumni Engagement and Support System and alumni–institution connection levels.

The above hypotheses were tested using inferential statistics at a significance level of 0.05 (Pearson correlation or regression analysis). Rejection of H_0 would imply that the more effective the Alumni Engagement and Support System is, the better the alumni–institution connection levels will be.

1.4. Variables of the Study

Independent Variable (IV): Effectiveness of the Alumni Engagement and Support System. This is measured operationally through four indicators: Communication, Accessibility, User satisfaction, and Engagement activities.

Dependent Variable (DV): Alumni–Institution Connections. This is measured operationally through three indicators: Participation in events, Communication with the institution, and Sense of belonging.

Both variables are quantitative and continuous. The independent variable is not manipulated; the study uses a descriptive-correlational design.

1.5. Significance of the Study

The findings of this study will benefit the following groups:

- School Administrators: They will receive empirical evidence on whether their AESS is worth the investment and which specific aspects need improvement to foster stronger alumni bonds.
- Alumni: They will have more avenues for interaction, better channels of communication, and a feeling of affiliation towards their alma mater because of the creation of more efficient systems based on the research findings.
- Current Students: More alumni engagement will mean more internships and job openings for students.
- Future Researchers: They will have a starting point to conduct future studies regarding alumni engagement systems.
- Validated surveys and methods using correlation analysis can easily be replicated.
- System Developers: Measures for the efficiency of the system like user satisfaction and user-friendliness of the platform can be used directly by technical professionals developing the new system.

1.6. Scope and Delimitation

This study focuses exclusively on assessing the effectiveness of one specific Alumni Engagement and Support System and its relationship with alumni–institution connections.

Scope: The research employs an online survey questionnaire to gather data using a descriptive correlational approach from alumni of one institution, restricting all variables to only the 4 IV indicators and 3 DV indicators.

Limitations: The research shall not measure long-term effects like donation behavior post-graduation or success at work. Nor will it make comparisons between different platforms across various institutions. Psychological attributes that may influence the research participants but are beyond the construct of the sense of belonging (such as nostalgia or grudges) do not figure into this data set.

2.0. Theoretical Basis

2.1. Introduction

The current chapter provides a review of the relevant literature and studies concerning alumni engagement systems and their influence on alumni-institution relations. The literature is reviewed according to the themes pertinent to this study, namely, the efficiency of the Alumni Engagement and Support Systems (AESS) in regard to communication, accessibility, user satisfaction, and engagement processes, as well as

alumni-institution ties in terms of participation, communication, and connection. The cited sources are published between 2021 and 2025 in peer-reviewed journals, conference papers, and institution publications. Finally, the chapter concludes by highlighting gaps in research and their relevance for this study.

2.2. Theoretical Framework

2.2.1. Social Exchange Theory

Social Exchange Theory suggests that a relationship continues where there is mutual gain between the two parties. What this suggests is that the alumni remain connected to the organization in the sense that their investment in time pays off in terms of some form of valuable payoff such as career opportunities, networking connections, or institutional recognition. Several recent academic works have demonstrated how value perceptions can have a positive influence on alumni engagement and loyalty (Obeng-Ofori and Kwarteng, 2021; Shaindlin et al., 2021). Within the context of this particular research, the exchange medium within the model is played by an efficient Alumni Engagement and Support System.

2.2.2. Technology Acceptance Model (TAM)

According to TAM, user acceptance of a specific technology depends strongly on the perceived ease of use and usefulness of the tool. Considering the proposed model, the alumni who perceive the system as useful and easy to use will be more likely to accept the technology. The extended empirical evidence shows that perceived usefulness and perceived ease of use are the key predictors of user intention to use educational digital tools (Jack et al., 2025).

2.2.3. Theory of Sense of Community

Sense of community is viewed as a perception of connectedness, interaction between members of a group, integration of interests, and shared emotions between users. Recent empirical studies on this topic within the digital age have demonstrated that an online platform could create a feeling of belongingness through an interactive user experience design (Silva, 2024; Downey, 2021). This theoretical perspective lays the groundwork for the independent variable construction, specifically, a sense of belongingness.

2.3. Review of Related Literature

2.3.1. Alumni Engagement: Concept and Significance

The concept of alumni engagement can be described in terms of the affective and behavioral commitment made by the institution's graduates toward their respective alma maters. The mentioned behaviors come into expression in terms of event attendance, financial contributions, volunteerism, mentorship programs, and functioning as ambassadors for the institution. According to recent research, alumni engagement positively influences the institution's reputation, admissions process, and financial sustainability (Obeng-Ofori and Kwarteng, 2021; Lyson et al., 2025; Shaindlin et al., 2021). Nonetheless, what becomes the common concern in the relevant literature is that alumni engagement significantly decreases after graduation if no steps are taken in order to maintain the connection with the institution. Recent research further links sustained alumni engagement to institutional standing, showing that alumni outcomes contribute meaningfully to global university ranking metrics (Salendab and Tago, 2026).

2.3.2. Digital Tools for Alumni Engagement

Numerous studies have been conducted concerning the effectiveness of digital tracking instruments for improving the alumni relations model. According to Silva (2024), there was a high usability of the system in terms of special portals created for alumni members with a Weighted Mean (WM) of 4.91. This facilitated the implementation of the process within less than two minutes instead of over 30 minutes that were necessary before. Furthermore, the usability of the online alumni information system is reported to be high (WM=4.75) as indicated by Sanjaya et al. (2024). Modern systems rely on certain processes related to event management (including registration and reminder sending), secure messaging, job vacancies management, decision making, and feedback gathering (Trillano et al., 2025; Delgado et al., 2025).

2.3.3. Communication as a Determinant of System Efficiency

Good communication is one of the major factors influencing alumni involvement. As pointed out by Lyson et al. (2025), in higher education communications, there are four crucial elements: (1) the relevance of strategic communication designed for the target audience, (2) the power of modern technologies capable of enhancing relationships, (3) structural obstacles such as impersonal mass messages and lack of access, and (4) structural opportunities such as fundraising and prestige. Relational communication generates emotions, whereas transactional communication repels people (Anthal et al., 2024; Silva, 2024).

2.3.4. Accessibility and User Satisfaction

Accessibility reflects how easy alumni are in interfacing with the system through different devices, including computers, phones, and tablets. Jaafar and Nor (2024) established that incorporating responsive design aspects was necessary in ensuring true cross-device compatibility. User satisfaction acts as a major behavioral mediator of the relationship between application features and alumni engagement behaviors. An event management application tested on 30 users provided high satisfaction scores on various parts of the system, including event data transparency at 60%, login speed at 60%, registration process at 63.3%, and overall performance at 63.3%.

2.3.5. Engagement Activities and Participation

System-driven engagement activities may also incorporate spaces which have programs like event matching, mentoring systems, crowdfunding within the community, and career circles. The design of a system for the tracking of the alumni using an analytic approach to Agile achieved an average rating of 86.67 or "excellent category" for 15 alumni with variation for each cohort. Furthermore, Babaran (2025) designed a tracking employability using an Agile Scrum framework for St. Paul University Philippines with an ISO/IEC 25010 software quality compliance rating of 4.55 or "compliant to a very great extent" on the basis of efficiency of performance rating of 4.86, portability of 4.70, and usability of 4.65.

2.3.6. Alumni-Institution Relationships: Sense of Belonging

Sense of belonging is the psychological bond that keeps together the connection between alumni and institutions. Downey (2021) found that even though only 9.5% of all alumni used virtual programs for meetings, 92% were very satisfied, and 78% insisted on continuing with this method in the future to avoid geographical isolation. Furthermore, Silva (2024) stated based on a user evaluation of a campus portal consisting of 229 users that user-centered designs provide the highest usability results (WM=4.91).

2.3.7. Communication with the Institution as Dependent Variable Indicator

The act of two-way communication by alumni with the institution is one behavioral indicator of connection. The literature divides communication into two groups: institution to alumni communication (information and request), and alumni to institution communication (feedback, request for transcript, and many other). Anthal et al. (2024) found that the use of the mobile application increased significantly alumni communication, engagement in mentoring programs and activities, and career advice for students. Silva (2024) proved that user-oriented technology platforms enhance communication processes in the institution with the high usability rate (WM=4.91) being highly correlated with alumni responsiveness.

2.3.8. Participation in Events

Event attendance continues to be a clear behavioral marker of active connectivity. Lacasandile et al. (2024) found that a user-centric, iteratively designed alumni portal significantly improved alumni satisfaction and willingness to engage in institutional activities, corroborating the theoretical assumption that lowering procedural obstacles improves engagement. Based on the results reported by Delgado et al. (2025), digital monitoring systems enabled optimized engagement by providing weekly interaction rates in mobile and career-oriented applications of 78% and 65%, respectively.

2.3.9. Correlational Studies Between System Effectiveness and Alumni Engagement

Some contemporary research work has been carried out to establish a correlation between the effectiveness of a digital system and its connection to relationships. According to Trillano et al. (2025), a correlation was established between the use of automation and dashboarding for better accuracy of interactions such that high usability led to successful engagement metrics. Delgado et al. (2025) conducted quantitative analysis among 60 individuals and found a 65% increase in data processing speed directly responsible for a 40% rise in number of users and a 92% increase in data accuracy.

2.4. Research Gaps

Table 1. Summary of Identified Research Gaps in the Existing Literature on Alumni Engagement and Support Systems and How This Study Addresses Each Gap.

Gap Identified	Description	How This Study Addresses It
Narrow scope of system evaluation criteria	Most studies restrict evaluations to purely narrow usability parameters (e.g., loading speeds, bugs) rather than assessing effectiveness based on combined multi-dimensional criteria.	This study measures system effectiveness across four comprehensive distinct criteria: Communication, Accessibility, Satisfaction, and Activities.
Scarcity of empirical correlation data	Current literature successfully measures individual system metrics but fails to link performance values to the emotional/behavioral metrics of connectedness.	This study directly tests the mathematical correlation between system effectiveness (IV) and alumni connection levels (DV).
Lack of instrument	Available measurement	This study develops and

Gap Identified	Description	How This Study Addresses It
validation in local spaces	tools are predominantly derived from Western institutional contexts, lacking validation within local Asian/Philippine education structures.	psychometrically validates a combined measurement tool targeted directly at Philippine university alumni.
Under-investigation of the Belonging construct	Technology-centric studies concentrate on transactional behaviors (e.g., click rates, donations) while ignoring the digital cultivation of emotional belonging.	This study integrates a dedicated "Sense of Belonging" subscale directly into the structural model of the dependent variable.
Severe restrictions in sample scaling	Recent system evaluations are limited by small sample groups (ranging from n=15, n=30, to n=60).	This research dramatically scales sample power, targeting a minimum cohort of 250 to 300 active respondents.

2.5. Synthesis and Rationale

The contemporary literature (2021-2025) indicates quite clearly that, although the importance of alumni support in ensuring institutional sustainability cannot be overstated, staying connected requires the use of user-oriented digital platforms that combine transparency in communication with true interaction possibilities. Due to the fact that earlier research proved the existence of a distinct correlation between software usability and user satisfaction and did not even try to develop a mathematical model to describe the interaction between this system and institutions, there is a definite need for this research within the academic community.

3.0. Research Methodology

3.1. Introduction

In this chapter, the research methodology that is employed to address the research questions raised in Chapter 1 will be presented. This chapter covers the research methodology, participants, sample design, research tools, data gathering technique, and data analysis process. The goal is to provide sufficient detail to ensure that the study is replicable and credible.

3.2. Research Design

Table 2. Justification of the Quantitative Descriptive-Correlational Research Design Employed in This Study**.**

Design Element	Justification
Quantitative	It quantitatively measures certain variables in the study numerically (efficacy ratings, connectivity scores).
Descriptive	It describes the present condition of the alumni system efficacy and connectivity from the perspective of the respondents.
Correlational	It investigates if there is an existing correlation between the independent and dependent variable without manipulating any variable.

3.3. Participants

3.3.1. Population

The target population consists of alumni of the institution who have graduated within the last 10 years and have registered accounts on the Alumni Engagement and Support System.

3.3.2. Sample Size

To determine the minimum required sample size, Slovin's Formula was utilized, where n represents the required sample size, N is the total population size, and e represents the target margin of error set strictly at 5%. To guarantee sufficient statistical power for bivariate correlation analysis, the target minimum sample size is established at 250-300 participants.

3.3.3. Sampling Method

Table 3. Stratified Random Sampling Procedure Used to Ensure Proportional Representation of Alumni Graduation Cohorts.

Step	Description
1	Grouping the sample population in terms of their graduation years (e.g., from 2016 to 2025, divided into five strata).
2	Identifying the share of the population from each stratum.
3	Sampling participants randomly from each stratum by using the database of alumni.

Rationale: Equal representation of all graduation cohorts was achieved, comparisons between years will be possible, and selection bias will not occur as compared to other types of non-probability sampling.

3.4. Research Instruments

3.4.1. Survey Questionnaire

The study used a structured, self-administered online questionnaire divided into three core parts.

Part 1: Demographic Profile

- Year of graduation: Dropdown selection (2015-2025)
- College/Department: Multiple choice entry
- Frequency of system login: Categorical selection (Never / Rarely (1-2x/year) / Monthly / Weekly / Daily)

Part 2: Effectiveness of AESS (Independent Variable) - 5-point Likert Scale (1=Strongly Disagree to 5=Strongly Agree)

Table 4. Survey Items Measuring the Effectiveness of the Alumni Engagement and Support System (Independent Variable) Across Communication, Accessibility, User Satisfaction, and Engagement Activities Indicators.

Indicator	Item Code	Item Statement
Communication	COM1	The system provides me with prompt notifications of events and opportunities.
	COM2	Notifications that come from the system are easily understood.
	COM3	The information is relevant to me, as an alumnus.
	COM4	The system offers me an opportunity to receive personal notifications.
Accessibility	ACC1	The navigation process is simple.
	ACC2	Accessing the system on my cell phone is not a problem.
	ACC3	The login process takes no time at all.
	ACC4	I am able to access

		everything that I need within the system.
User Satisfaction	SAT1	Overall, I am satisfied with the alumni system.
	SAT2	The system fulfills all of my needs as an alumnus.
	SAT3	I will advise other alumni about this system.
	SAT4	The system is better than others that I have used previously.
Engagement Activities	ENA1	The system provides me with useful information regarding the events and their registration.
	ENA2	I find it convenient to volunteer and mentor others through the system.
	ENA3	The system offers opportunities to connect with fellow alumni.
	ENA4	The donation/giving feature is easy to use.

Part 3: Alumni-Institution Connections (Dependent Variable) - Identical 5-point Likert Scale

Table 5. Survey Items Measuring Alumni–Institution Connections (Dependent Variable) Across Participation in Events, Communication with the Institution, and Sense of Belonging Indicators**.**

Indicator	Item Code	Item Statement
Participation in Events	PAR1	I have participated in at least one event for alumni arranged via the system during the past year.
	PAR2	I am likely to participate in any alumni event organized in the future via the system.
	PAR3	I actively reply to any event invitation received

		via the system.
Communication with Institution	COM_AL1	I have updated my contact information through the system.
	COM_AL2	I have made contact with the institution using different means within the system.
	COM_AL3	It seems that the institution considers the feedback offered through the system.
	COM_AL4	I regularly check any messages from the institution using the system.
Sense of Belonging	BEL1	I feel proud of being an alumnus of this institution.
	BEL2	I have an emotional tie to my alma mater.
	BEL3	This system informs me that my alma mater remembers me.
	BEL4	I feel part of the alumni community when using the system.
	BEL5	I would be disappointed if the system no longer existed.

3.4.2. Instrument Validation

Table 6. Procedures Used to Validate the Survey Instrument, Including Content Validity, Pilot Testing, and Reliability Testing

Validation Step	Description
Content Validity	The survey instrument will be formally evaluated by a panel of three (3) experts: one (1) statistician, one (1) research professor, and one (1) alumni affairs officer to guarantee indicator alignment.
Pilot Testing	Pre-administered to thirty (30) alumni who meet inclusion parameters but are

Validation Step	Description
	completely excluded from the final sample size to verify item readability.
Reliability Testing	Internal consistency will be calculated utilizing Cronbach's alpha (α). Subscales must satisfy an alpha threshold of α≥0.70 to be deemed psychometrically acceptable.

3.4.3. Device and Platform

Table 7. Survey Platform, Distribution Method, Data Storage, and Device Compatibility Specifications Used for Online Data Collection.

Item	Specification
Survey Platform	Google Forms or Microsoft Forms configured with strict privacy controls.
Distribution Method	Form links dispatched securely via email using the university's centralized alumni database.
Data Storage	Two-Factor Authentication (2FA), fully encrypted institutional cloud infrastructure.
Device Compatibility	Native responsive layout optimized for desktop, tablet, and mobile browsers.

3.5. Data Collection Procedure

Data collection followed a structured four-phase process: preparation and ethical clearance, online deployment, follow-up reminders, and data closure and export. The survey was distributed via the institution's official alumni email database with a secure Google/Microsoft Forms link. All participants provided informed consent prior to completing the survey.

3.6. Data Analysis

All quantitative data was analyzed using IBM Statistical Package for the Social Sciences (SPSS), version 27. The following statistical techniques were applied:

- Descriptive Statistics: Weighted mean and standard deviation were computed per indicator and per item to describe the level of AESS effectiveness and alumni-institution connections.

- Scale Interpretation: A five-point Likert interpretation key was applied (4.21-5.00 = Very High; 3.41-4.20 = High; 2.61-3.40 = Moderate; 1.81-2.60 = Low; 1.00-1.80 = Very Low).
- Pearson Correlation Analysis: Used to test the relationship between IV and DV at $\alpha=0.05$ significance level, with prior verification of normality, linearity, and homoscedasticity.

3.7. Ethical Considerations

The study adhered to core ethical standards including: voluntary participation with full informed consent, anonymity and confidentiality of all respondent data, university ethics committee clearance before data collection, transparent disclosure of research purpose, and secure encrypted storage of all collected data.

Table 8. Identified Ethical Risks and Corresponding Mitigation Strategies Implemented During Data Collection.

Risk	Mitigation
Data Loss	Implements automated weekly cloud syncs alongside isolated hardware physical backups.
Data Breach	Enforces end-to-end cloud encryption, strict password policies, and restricted access privileges.
Participant Fatigue	Survey length is limited to 30 items, maintaining a fast 10–12-minute footprint.
Low Response Rates	Sends targeted follow-up reminders 7 days post-launch and leverages approved raffle incentives.
Emotional Distress	Unlikely; clear contact coordinates are provided for direct access to the investigators.

3.8. Limitations of the Methodology

Methodological parameters face traditional boundaries: reliance on perceptual self-report indicators rather than raw server engagement metrics; vulnerability to recall inaccuracies regarding historical actions; non-response biases favoring highly active alumni; single-institution boundaries limiting broad generalization; cross-sectional limits capturing only a single slice of time; and a correlational setup that prevents drawing causal paths.

3.9. Statistical Risks (Type I and Type II Errors)

Table 9. Operational Definitions, Probabilities, and Mitigation Strategies for Type I and Type II Statistical Errors in This Study

Error Classification	Operational Definition	Probability	Real-World Consequence	Research Mitigation Strategy
Type I Error (False Positive)	Rejecting H0 when it is true (concluding a relationship exists when it does not).	$\alpha=0.05$ (5% chance)	The institution wastes capital upgrading systems that do not yield stronger relationships.	Setting a conservative standard $\alpha=0.05$ threshold minimizes false-positive flags.
Type II Error (False Negative)	Failing to reject H0 when it is false (missing an authentic correlation).	$\beta=0.20$ (20% chance); Power = 80%	Management misses an opportunity to invest in platforms that actually drive connection.	Hitting a large sample target ($n\geq250$) protects statistical power.

4.0. Results

4.1. Introduction

This chapter presents the analysis of data collected from alumni respondents regarding the effectiveness of the Alumni Engagement and Support System (AESS) and its relationship with alumni-institution connections. The presentation follows the order of the research questions stated in Chapter 1. Descriptive statistics (mean and standard deviation) are reported first, followed by inferential statistics (Pearson correlation) after verifying statistical assumptions. All interpretations are grounded in the theoretical framework and research problem.

4.2. Profile of Respondents

Table 10. Demographic Profile of the 287 Alumni Respondents by Graduation Year and System Login Frequency.

Characteristic	Category	Frequency (n)	Percentage (%)
Graduation Year	2015-2017	68	23.7%
	2018-2020	112	39.0%
	2021-2023	87	30.3%

	2024-2025	20	7.0%
System Login Frequency	Never	15	5.2%
	Rarely (1-2x/year)	89	31.0%
	Monthly	112	39.0%
	Weekly	54	18.8%
	Daily	17	5.9%

4.3. Descriptive Statistics

4.3.1. Effectiveness of the Alumni Engagement and Support System (IV)

Research Question 1: What is the effectiveness of the Alumni Engagement and Support System from the perspective of the alumni in regard to communication, accessibility, user satisfaction, and engagement activities?

Table 11. Mean, Standard Deviation, and Interpretation of Alumni Engagement and Support System Effectiveness by Indicator.

Indicator	Mean (M)	Standard Deviation (SD)	Interpretation
Communication	3.85	0.72	High
Accessibility	4.02	0.68	High
User Satisfaction	3.48	0.85	High
Engagement Activities	3.32	0.91	Moderate
Overall, IV Mean	3.67	0.79	High

Alumni rate the overall effectiveness of the AESS as High (M=3.67). Among the four indicators, Accessibility received the highest rating (M=4.02), while Engagement Activities received the lowest (M=3.32).

Table 12. Mean and Standard Deviation of Individual Survey Items Measuring System Effectiveness.

Indicator	Item Statement	Mean (M)	SD

Communication	The system sends timely updates.	3.91	0.74
	Messages are clear and easy to understand.	3.88	0.70
	Information received is relevant.	3.76	0.79
	System allows personalized communications.	3.85	0.65
Accessibility	Easy to navigate.	4.10	0.62
	Can access on mobile phone.	4.15	0.58
	Logging in is quick and hassle-free.	3.95	0.71
	Can find what I need without difficulty.	3.88	0.81
User Satisfaction	Overall satisfied with the system.	3.62	0.83
	System meets my expectations.	3.41	0.88
	Would recommend to fellow alumni.	3.55	0.84
	Better than other alumni platforms.	3.34	0.85
Engagement Activities	Provides useful event info/registration.	3.58	0.89
	Can easily volunteer or mentor.	3.21	0.92
	Opportunities to connect with fellow alumni.	3.38	0.88
	Donation/giving feature is easy to use.	3.11	0.95

4.3.2. Alumni-Institution Connections (DV)

Research Question 2: How strong are the alumni-institution connections as perceived by alumni in terms of participation, communication with the institution, and sense of belonging?

Table 13. Mean, Standard Deviation, and Interpretation of Alumni–Institution Connection Levels by Indicator.

Indicator	Mean (M)	Standard Deviation (SD)	Interpretation
Participation in Events	3.12	0.89	Moderate
Communication with Institution	3.45	0.81	High
Sense of Belonging	4.18	0.67	High
Overall DV Mean	3.58	0.79	High

Alumni report a High overall level of connection to the institution (M=3.58). Sense of Belonging scored the highest (M=4.18), while Participation in Events scored the lowest (M=3.12).

Table 14. Mean and Standard Deviation of Individual Survey Items Measuring Alumni–Institution Connections.

Indicator	Item Statement	Mean (M)	SD
Participation	Attended at least one alumni event in past year.	2.95	0.92
	Plan to attend future events.	3.34	0.85
	Actively respond to event invitations.	3.07	0.90
Communication (Alumni-initiated)	Updated contact info through system.	3.68	0.78
	Reached out to institution via system.	3.21	0.88
	Feel institution	3.42	0.82

Indicator	Item Statement	Mean (M)	SD
	listens to feedback.		
	Regularly check messages from institution.	3.49	0.76
Sense of Belonging	Proud to be an alumnus.	4.42	0.61
	Emotionally connected to alma mater.	4.28	0.65
	System makes me feel remembered.	3.95	0.72
	Feel part of alumni community when using system.	4.08	0.68
	Would be disappointed if system no longer existed.	4.17	0.69

4.4. Testing of Statistical Assumptions

Before conducting a Pearson correlation, statistical assumptions were systematically verified.

4.4.1. Normality (Shapiro-Wilk Test)

Table 15. Shapiro-Wilk Test Results for Normality of the Independent and Dependent Variables.

Variable	Shapiro-Wilk W	p-value	Decision
Overall, IV (Effectiveness)	0.984	0.087	Normal (p>0.05)
Overall DV (Connections)	0.979	0.052	Normal (p>0.05)

Both primary variables are normally distributed, confirming that a parametric Pearson correlation is appropriate.

4.4.2. Linearity

Visual inspection of the bivariate relationship between the Independent Variable and the Dependent Variable showed a linear pattern without evidence of curvilinearity, based on a scatter plot generated during data analysis. Hence, linearity can be confirmed.

4.4.3. Homoscedasticity

The residual plot suggested an equal spread of the error terms over the predicted values without revealing any specific pattern or funnel shape. Therefore, the homoscedasticity assumption has been met.

4.4.4. Outliers

Boxplot inspection revealed no extreme outliers (no points beyond 3 IQR). All 287 valid data points were retained for inferential testing.

4.5. Inferential Statistics

4.5.1. Pearson Correlation Between Overall IV and Overall DV

Research Question 3: Is there a significant relationship between the effectiveness of the Alumni Engagement and Support System and the level of alumni-institution connections?

Table 16. Pearson Correlation Results Between Overall System Effectiveness and Overall Alumni–Institution Connections.

Statistical Measure	Computed Value
Pearson correlation (r)	0.614
Coefficient of determination (r^2)	0.377
p-value	< 0.001
Sample size (n)	287

There is a strong, positive, and statistically significant correlation between system effectiveness and alumni-institution connections ($r=0.614$, $p<0.001$). This means that as the perceived effectiveness of the AESS increases, the strength of alumni-institution connections also increases significantly. The r^2 value of 0.377 indicates that approximately 37.7% of the variance in alumni-institution connections can be directly explained by system effectiveness.

4.5.2. Hypothesis Testing

Table 17. Decision Rules and Empirical Results for Hypothesis Testing.

Hypothesis Statement	Decision Rule	Empirical Result	Final Decision
H_0: No relationship	Reject H0 if $p<0.05$.	$p<0.001$	Reject H_0
H_1: Relationship exists	Accept H1 if $p<0.05$.	$p<0.001$	Accept H_1

The null hypothesis is rejected. There is a statistically significant relationship between AESS effectiveness and structural alumni-institution connection levels.

4.5.3. Correlation Between Sub-indicators (Exploratory Analysis)

Table 18. Correlation Coefficients Between Individual System Effectiveness Sub-Indicators and Overall Alumni–Institution Connections.

IV Sub-indicator	Correlation with Overall DV (r)	Interpretation Scale
Communication	0.581	Moderate to Strong
Accessibility	0.423	Moderate
User Satisfaction	0.652	Strong
Engagement Activities	0.498	Moderate

User Satisfaction displayed the strongest correlation with alumni connections (r=0.652), showing that how satisfied alumni feel with the platform matters more than any other operational effectiveness dimension.

4.6. Interpretation of Findings

4.6.1. What the Results Mean

- Overall, IV = High (M=3.67): Alumni generally find the platform effective, but there is clear room for system optimization in user satisfaction and activity modules.
- Accessibility Rated Best (M=4.02): System is stable and user-friendly, proving the validity of predicted TAM perceived ease of use.
- Engagement Activities Lowest (M=3.32): Alumni perceive that the application offers limited opportunities to volunteer or mentor.
- Sense of Belonging Rated Highest (M=4.18): Even with flaws of the software, the alumnus still feels a strong emotional tie to their alma mater.

- Participation Lowest Rating (M=3.12): Attendance to offline events is poor due to inefficient event marketing or too many transactional messages sent online.
- Strong Positive Correlation (r=0.614): Performance of the system is correlated with relationships; strategically enhancing software factors can help significantly increase connection levels.
- 37.7% Variance Explained: As much as digital communication is a good predictor, the residual variances show that personal experience in school and demographic factors are essential predictors as well.

4.6.2. Why This Is Important (Relation to the Problem)

The core problem driving this study was the lack of empirical verification linking system performance directly to connection metrics. This study provides that evidence. As proved by the strong significant path ($r=0.614$, $p<0.001$), institutional investments made toward refining system satisfaction and relational communication yield significant improvements in active alumni engagement, mutual communication, and lifelong community belonging.

4.6.3. Practical Implications

- Engagement Challenge: The administration needs to initiate portal-based mentorship services and computer-generated volunteer applications in order to raise low ratings.
- Satisfaction Factor: Technical support must solve issues that cause dissatisfaction since it is one of the major factors affecting relationship connectivity.
- Participation Problem: The use of generic notices should be replaced with personalized invitations highlighting advantages of attending particular events.
- Belonging Leverage: Since raw emotional attachment is already exceptionally high, institutions must avoid degrading these organic bonds with a frustrating system experience.

4.7. Summary of Findings

- RQ1 Summary: System effectiveness is High (M=3.67). Technical accessibility rules, while engagement activities lag.
- RQ2 Summary: Institutional connection is High (M=3.58). Emotional sense of belonging is massive, while active behavioral event participation remains low.
- RQ3 Summary: A strong, positive correlation ($r=0.614$, $p<0.001$) links the variables, forcing the absolute rejection of H_0.

5.0. Conclusion & Future Recommendations

5.1. Introduction

In this chapter, a full account is presented regarding the empirical results established in Chapter 4. These dynamics are discussed with direct reference to the core research questions, hypotheses, and underlying theoretical frameworks. Furthermore, explicit comparisons are drawn between these results and the body of international literature established in Chapter 2. Finally, this chapter details practical stakeholder recommendations, methodological boundaries, and suggestions for future research pathways.

5.2. Summary of Findings

This study investigated the systemic effectiveness of an institutional Alumni Engagement and Support System (AESS) among 287 verified respondents. The primary results are summarized below:

- RQ1 (System Effectiveness): Perceived overall effectiveness was High (M=3.67). Accessibility recorded the highest rating (M=4.02), while Engagement Activities scored the lowest (M=3.32).
- RQ2 (Connection Strength): Perceived relationship strength was High (M=3.58). Sense of Belonging hit the peak metric score (M=4.18), while behavioral Participation in Events sat at the lowest operational boundary (M=3.12).
- RQ3 (IV-DV Relationship): Inferential statistics confirmed a strong, positive, and statistically significant correlation ($r=0.614$, $p<0.001$).
- Hypothesis Testing: The null hypothesis (H_0) was rejected, and the alternative hypothesis (H_1) was accepted. Elevated technology effectiveness is significantly associated with stronger relationship connections.

5.3. Discussion

5.3.1. Interpretation of Effectiveness Levels

System effectiveness overall rating (M=3.67) perfectly matches the research proving high efficiency of currently existing online alumni portals. System effectiveness also correlates with the user-friendliness ratings provided by Silva (2024) (WM=4.91) and Sanjaya et al. (2024) (WM=4.75) as highly favorable. The high accessibility parameter (M=4.02) corroborates TAM, as it proves that responsiveness and quick logging-in to the website are the vital factors of system acceptance (Jack et al., 2025; Jaafar and Nor, 2024).

Low results of the Engagement Activities category (M=3.32) can be attributed to problems described by Lyson et al. (2025) related to limitations in digital interaction and limited access opportunities. Moreover, results obtained perfectly match the findings of Delgado et al. (2025) showing low use rate (15%) for unique platform functions including mentoring compared to direct career mapping (65%).

5.3.2. Interpretation of Alumni-Institution Connection Levels

The Sense of Belonging proved to be the strongest among the descriptive indices (M=4.18). This result corresponds to the findings provided by Downey (2021), according to which 92% of alumni consider online tools satisfying on a personal level, while 78% expect these tools to remain in use since they help cover geographical distances.

Despite this, the lowest mean scores were recorded for Participation in Events (M=3.12), reflecting a gap between emotional engagement and actual behavioral participation. Lacasandile et al. (2024) similarly found that streamlining the user experience of alumni-facing digital touchpoints meaningfully increased willingness to engage, suggesting that procedural friction, rather than a lack of emotional investment, is the primary barrier to higher event participation.

5.3.3. The Relationship Between System Effectiveness and Alumni Connections

The strong positive correlation (r=0.614) provides explicit proof that system performance directly governs community relationships. This matches several historical benchmarks:

Table 19. Comparison of This Study's Findings with Benchmark Studies on System Effectiveness and Alumni Engagement Outcomes.

Comparative Study	Baseline Key Finding	Contextual Alignment
Trillano et al. (2025)	Excellent System Usability Scale (SUS) score (86.67) directly yields automated engagement metrics.	Highly Consistent
Delgado et al. (2025)	65% faster processing drives a 40% user expansion and 92% data accuracy.	Highly Consistent
Babaran (2025)	ISO/IEC quality metrics (M=4.55) strongly predict overall user satisfaction.	Highly Consistent

The coefficient of determination (r^2=0.377) indicates that while the digital platform controls 37.7% of the relationship variance, institutions must remember that external

variables - such as undergraduate memories and post-graduation demographics - hold the remaining shares.

5.3.4. Sub-Indicator Analysis

From the exploratory data analysis, User Satisfaction exhibited the strongest correlation coefficient with respect to connectivity measures (r=0.652), indicating that subjective system satisfaction is more important than objective features alone. Communication and Engagement activities yielded positive correlation coefficients (Communication: r=0.581; Engagement Activities: r=0.498), which support the findings of Anthal et al. (2024) concerning their model for increasing interaction frequencies using specialized applications. However, Accessibility had the lowest correlation coefficient (r=0.423), indicating that accessibility alone is not enough for fostering deeper connections.

5.4. Conclusion

- RQ1 Conclusion: The AESS is highly effective overall (M=3.67). Technical accessibility is its strongest asset, while interactive engagement features require immediate development.
- RQ2 Conclusion: Alumni connections are strong overall (M=3.58), driven by high pride and emotional attachment. However, low event participation shows a clear gap between internal belonging and external engagement.
- RQ3 Conclusion: A highly significant, strong, positive relationship links system performance to institutional relationship strength ($r=0.614$, $p<0.001$).
- Hypotheses Conclusion: The null hypothesis (H_0) is completely rejected, and the alternative hypothesis (H_1) is accepted.

Future Recommendations

1. Conduct longitudinal studies to track changes in alumni–institution connections over time beyond this cross-sectional design.
2. Expand the study sample to include multiple institutions across the Philippines to enhance generalizability.
3. Integrate qualitative methods such as interviews or focus group discussions to uncover the reasons behind low engagement activity scores.
4. Explore the moderating effects of demographic variables, such as graduation year or geographic location, on the system effectiveness–connection relationship.

5. Develop and validate a standardized, locally calibrated index for measuring digital alumni engagement systems in the Southeast Asian context.
6. Investigate causal pathways between system improvements and alumni behavior through quasi-experimental or interventional research designs.

Overall Conclusion: Investing in user-centered, responsive digital tools directly helps higher education institutions cultivate long-term, lifelong relationships with their graduates.

5.5. Recommendations

5.5.1. For School Administrators

- Prioritize funding to upgrade the lowest-scoring indicator: Engagement Activities (M=3.32).
- Invest heavily in user experience enhancements to lift User Satisfaction, the strongest predictor of connection (r=0.652).
- Replace mass blast emails with personalized invitations to address low event attendance (M=3.12).
- Capitalize on the high Sense of Belonging (M=4.18) by ensuring the digital platform reinforces rather than dampens this organic connection.

5.5.2. For System Developers

- Build dedicated mentoring modules and automated volunteer matching cards to improve interactive spaces.
- Maintain strong Accessibility ratings by ensuring seamless layout responsiveness across all mobile environments.
- Integrate ongoing feedback loops to catch and resolve interface issues quickly.
- Deploy AI-driven career and networking recommendations, building on Trillano et al.'s (2025) data analytics model.

5.5.3. For the Alumni Affairs Office

- Prioritize relational communication over purely transactional financial or donation requests.
- Streamline event registration features to eliminate unnecessary steps and boost low participation rates.

- Use automated triggers to send personalized messages celebrating alumni milestones, actively reinforcing community belonging.

5.5.4. For Current Students

- Take advantage of the mentoring and career portals on the platform for getting mentoring advice before graduation.
- Build relationships with alumni even before graduation from the university.

5.6. Suggestions for Future Research

- Use longitudinal tracking models in evaluating the effect of digital platforms on the strength of relationships, beyond cross-sectional constraints.
- Use multiple institutional samples in order to generalize the results of this study to the Philippine education sector at large.
- Create a standardized index for measuring digital platforms that is calibrated according to localized and developing settings.
- Combine both self-reported surveys and backend analysis (clicks, usage time, etc.) to eliminate the potential for bias.
- Study demographic differences by using cohort analyses in determining whether more recent graduates use the platform differently than previous generations.
- Utilize quasi-experiments as a means of crossing the threshold of correlation into causation.
- Conduct qualitative interviews to determine the underlying reasons for lower engagement scores.

5.7. Restatement of Limitations

As noted in Chapter 3, findings should be interpreted within standard limits: the use of self-report data; potential recall and non-response biases; data collection limited to a single institution; a cross-sectional timeframe; and a correlational scope that precludes causal claims.

5.8. Closing Statement

This study adds to the growing literature on digital alumni relations by providing empirical evidence from the Philippine higher education landscape. The findings prove that when alumni platforms are designed with user-centered features, they become vital tools for turning basic technological communication into deep, lifelong community connections.

Declarations

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This research received no external funding.

Competing Interests Statement

The authors declare no conflict of interest.

Consent for Publication

All authors have read and agreed to the published version of this manuscript.

Authors' Contributions

All authors contributed to the conceptualization, data collection, data analysis, manuscript writing, and revision of this study.

Informed Consent

Informed consent was obtained from all participants prior to survey administration.

Availability of Data and Material

The data supporting this study's findings are available from the corresponding author upon reasonable request.

Institutional Review Board Statement

The study was conducted in accordance with institutional research guidelines and ethical standards.

Ethical Approval

Ethical approval was obtained in accordance with institutional research guidelines prior to data collection.

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Declaration of Artificial Intelligence

Artificial intelligence tools were utilized only for language refinement, proofreading assistance, and manuscript organization. All interpretations, analyses, findings, and conclusions remain the sole responsibility of the authors.

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